

DESCRIPTION OF WORK AND VALIDATION PROCEDURE FOR WR2300 WAVEGUIDE PHASE SHIFTERS (ref: WORK REQUEST # 16366)

A. DESCRIPTION OF WORK TO BE PERFORMED

This work involves routine maintenance and visual inspection of the Building 420 WR2300 waveguide phase shifters, #1 through #8.

This work will include visual inspection of the waveguide interior of each phase shifter to check the condition of rf contacts on the plunger pistons, and also visual inspection and routine maintenance of exterior mechanisms utilized to drive the phase shifter mechanical parts.

NOTE: This work will be performed during the 2004-2005 holiday shutdown, with all five 350MHz rf systems under MCR and individual LOTO.

For waveguide phase shifters #1 and #2, this work will consist of the following discrete steps (see figure 1):



Figure #1 – Waveguide phase shifters #1 and #2

NOTE: Check tightness and integrity of all waveguide supports prior to removal of any waveguide bolts!

1. Remove the straight waveguide section between phase shifters #1 and #1, at flanges # 024 and # 025.
2. Remove the control cable from both phase shifters.
3. Inspect the interior of both phase shifters.
4. Re-install the straight waveguide section at flanges # 024 and # 025.
5. Perform visual inspection of the switch drive mechanism on both phase shifters and perform routine maintenance as necessary.
6. Re-attach the control cable at each phase shifter.

For Waveguide phase shifters #3 and #4, this work will consist of the following discrete steps (see figure 2 and figure 3):



Figure # 2 – Waveguide phase shifters #3 and #4



Figure #3 – Waveguide phase shifters #3 and #4

NOTE: Due to the height, weight, and configuration of the waveguide assembly that includes phase shifters #3 and #4, removal of any waveguide section is not recommended. Maintenance on phase shifters #3 and #4 will consist of visual inspection and maintenance of exterior drive components only.

1. Remove the control cable from both phase shifters.
2. Perform visual inspection of the switch drive mechanism on both phase shifters and perform routine maintenance as necessary.
3. Re-connect the control cable at each phase shifter.

For Waveguide phase shifters #5 and #6, this work will consist of the following discrete steps (see figure 4):



Figure #4 – Waveguide phase shifters #5 and #6

NOTE: Check tightness and integrity of all waveguide supports prior to removal of any waveguide bolts!

1. Remove the straight waveguide section at flanges # 705 and # 706, adjacent to the phase shifters.
2. Remove the control cable from both phase shifters.
3. Inspect the interior of both phase shifters.
4. Re-install the straight waveguide section at flanges # 705 and # 706.
5. Perform visual inspection of the switch drive mechanism on both phase shifters and perform routine maintenance as necessary.

6. Re-attach the control cable at each phase shifter.

For Waveguide phase shifters #7 and #8, this work will consist of the following discrete steps (see figure 5):

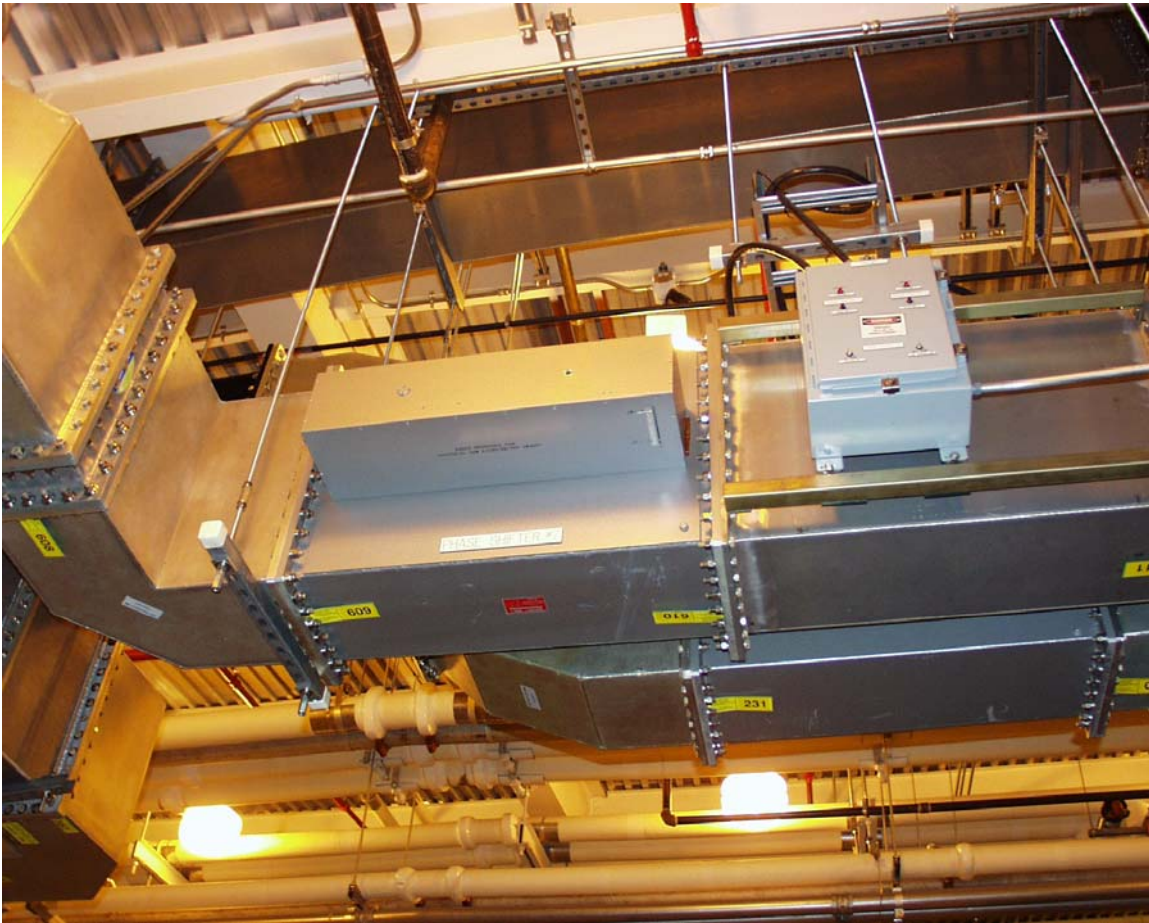


Figure #5 – Waveguide phase shifters #7 and #8

NOTE: Check tightness and integrity of all waveguide supports prior to removal of any waveguide bolts!

1. Remove the control cable from both phase shifters.
2. Remove waveguide phase shifter # 7 at flanges # 609 and # 610.
3. Inspect the interior of both phase shifters.

4. Re-install phase shifter #7 at flanges # 609 and # 610.
5. Perform visual inspection of the switch drive mechanism on both phase shifters and perform routine maintenance as necessary.
6. Re-attach the control cable at each phase shifter.

B. DESCRIPTION OF VALIDATION AFTER WORK IS PERFORMED

After visual inspection of all waveguide phase shifters and re-assembly of all tampered waveguide, the following steps will be completed to insure that all of the waveguide switches are returned to normal operation conditions and are fully functional:

1. Waveguide bolts on flanges # 024 and # 025, adjacent to waveguide phase shifters #1 and #2, will be torqued to 35 ft-lbs, witnessed and independently verified by a second person. Document this torquing procedure in the on-line waveguide flange log at the time it is completed.
2. Waveguide bolts on flanges # 705 and # 706, adjacent to waveguide phase shifters #5 and #6, will be torqued to 35 ft-lbs, witnessed and independently verified by a second person. Document this torquing procedure in the on-line waveguide flange log at the time it is completed.
3. Waveguide bolts on flanges # 609 and # 610, adjacent to waveguide phase shifters #7 and #8, will be torqued to 35 ft-lbs, witnessed and independently verified by a second person. Document this torquing procedure in the on-line waveguide flange log at the time it is completed.
4. When rf system operation is resumed, all of the above waveguide flanges will be sniffed for rf leakage while operating at approximately 10kW rf power. Document this sniffing procedure in the on-line waveguide flange log at the time it is completed.

Work Approval Signatures

Prepared by:

_____ Date: _____

RF Group Leader:

_____ Date: _____

ASD Associate Division Director:

_____ Date: _____

ESH Coordinator:

_____ Date: _____

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